Drainage Reports

Abbreveated Water & Sewer Need Reports

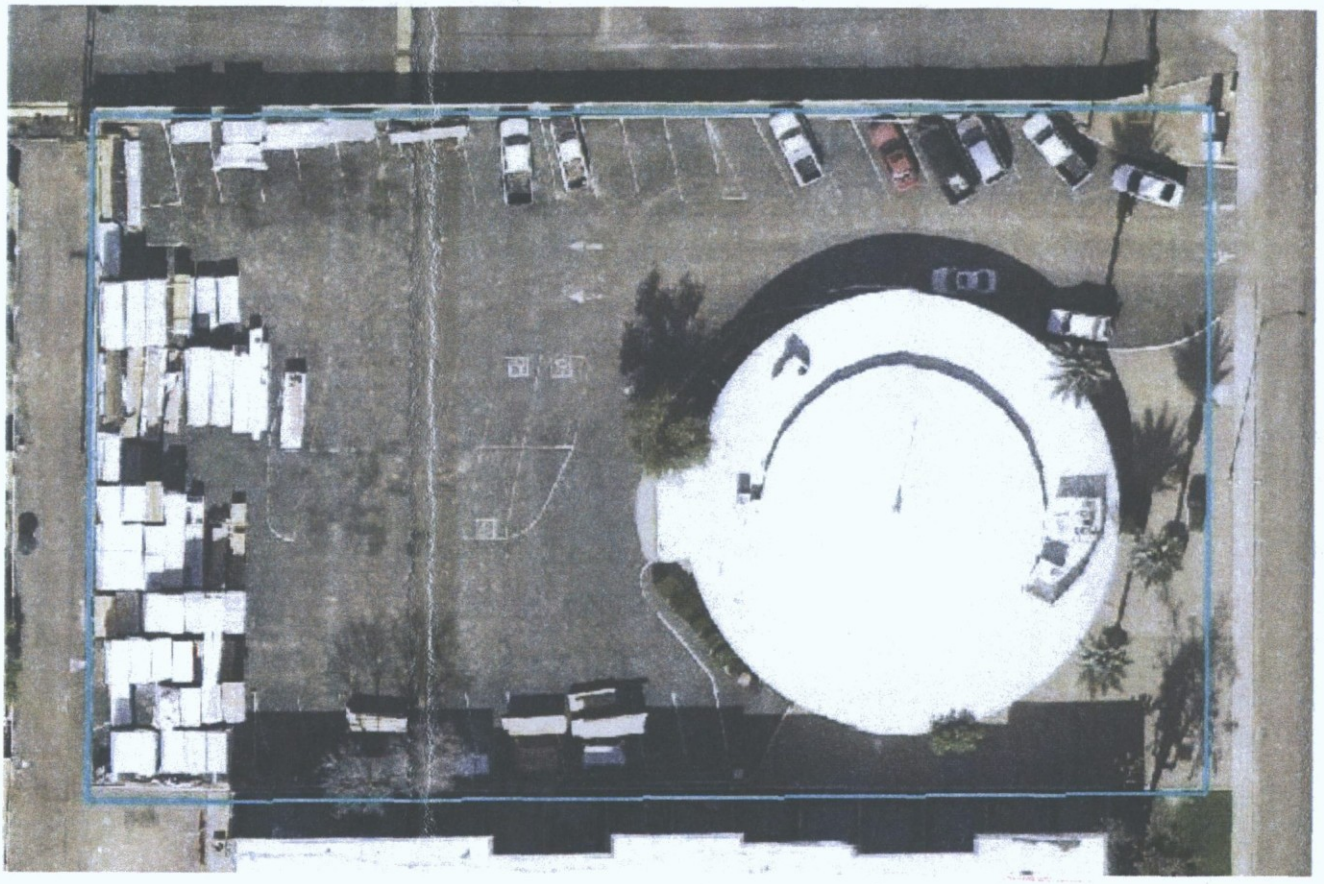
Water Study

Wastewater Study

Stormwater Waiver Application

PRELIMINARY DRAINAGE REPORT

AERIES CONDOMINIUMS
3214 N 70TH ST
SCOTTSDALE, ARIZONA



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Plan #
Case # 19-DR-2016
P-S #
[X] Accepted
[ ] Corrections
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Reviewed By Date

EDG PROJECT NO.: 15-EEM-2320CIV
JULY 19, 2016

19-DR-2016
07/25/16

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July 19, 2016

Landmark Homes USA
8901 E. Pima Center Parkway, Suite 100
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Attention: John Kostaras

Subject: **Preliminary Drainage Report**
Aeries Condominiums
3214 N 70th St
Scottsdale, AZ 85251
EDG Project No.: 15-EEM-2320CIV

The purpose of this report is to provide requirements and guidance necessary for developers, consultants, and industrial and commercial operators to select, design and maintain drainage and flood control at the subject site. The ultimate goal of this report is to protect the public health, safety and welfare and minimize adverse impacts to the environment. This study conducted by Epsilon Design Group (EDG), on A.P.N. 130-14-011 located on the west side of 70th Street south of Osborn Rd in Scottsdale, Arizona. Our services were conducted in general conformance with the scope and limitations of the Maricopa County Standards and Specifications to provide adequate analysis and design of drainage systems for both water quantity and water quality during and following construction.

Sincerely,

Epsilon Design Group.

Registered Professional Engineer (Civil)
CERTIFICATE NO.
38801
MAHDI M. SADEK
Date Signed
7/19/16
ARIZONA, U.S.A.
EXPIRES 3/31/2018

Mahdi Sadek, P.E.
Civil Engineer

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1.0 EXECUTIVE SUMMARY

Presented in this report are the **minimum** design and technical criteria for the analysis and design of storm drainage and grading for both quantity and quality during and following construction. Wherever possible, the Maricopa County Flood Control District Drainage Design Manuals are incorporated by reference into these Criteria. The Drainage Design were obtained from the Maricopa County Flood Control District website: *www.fcd.maricopa.gov* and Maricopa Association and Government (MAG) Specifications.

This report summarizes the hydrologic and hydraulic analyses performed by EDG. The objectives of this report are to demonstrate the proposed subject facility will have no anticipated negative drainage impact on the surrounding area, and that adequate drainage is provided within the project limits. The purpose of this drainage report is to conceptually define the nature of the proposed project, describe all existing conditions and proposed facilities needed to conform to the requirements of the Maricopa County Flood Control District.

This drainage report has been prepared in accordance with the current versions of the City of Scottsdale Design Standards & Policies Manual and Maricopa County Drainage Policies and Standards, Drainage Design Manuals for Maricopa County, Volume 1 – Hydrology and Volume 2 – Hydraulics and Section 1205 of the Maricopa County Zoning Ordinance.

1.1 INTRODUCTION

The subject site consists of one parcels of land 0.85 acre in size located on the west side of 70th Street south of Osborn Rd in Scottsdale, Arizona. The subject site is shown on the attached Site Location Map in Appendix A.

The proposed site improvements will consist of four new buildings approximately 3,060 s.f. in size with each building consisting of four condominiums with associated driveways, parking, and hardscape/landscape areas.

The accompanying Conceptual Grading and Drainage Plan in Appendix B shows the proposed site improvements, existing topography, proposed drainage, and stormwater retention/detention areas for the subject site.

1.1.1 TOPOGRAPHY

The existing topography slopes generally from west to east at an approximate slope of 0.5% to 70th St. along the east side of the site. The drop in surface elevation is approximately 1.5 feet between the east and west boundaries.

1.1.2 EXISTING CONDITIONS

Onsite: The site is currently developed with a 6,400 s.f. building with associated parking, driveways, sidewalks, and landscape areas. The site is bound on the east by 70th Street, on the south by an apartment complex, on the west by an alley and developed residential lots, and along

the north by a driveway and townhome complex. Site runoff appears to drain from west to east into 70th St. No retention exists on site.

Drainage in 70th St flows south along the curb and gutter. The longitudinal slope of 70th St. is approximately 0.33% from north to south along the frontage to the site.

2.0 DRAINAGE DESIGN

2.1 REQUIRED RETENTION (PRE-DEVELOPMENT)

Required retention volume is calculated using a weighted average 'C' value for the site areas as follows:

- Building/Pavement/Concrete Areas = 33,506 square feet
- Landscape Areas = 3,393 square feet

The calculated weighted 'C value is as follows:

Weighted C = [(A)(C) + (A)(C)] / A (total)
Landscape Area, A (3,393 sf)
Landscape Area Coefficient, C (0.45)
Building/Pavement/Concrete Area, A (33,506 sf)
Building/Pavement/Concrete Area, C (0.95)
Weighted Average (C) = $\frac{(3,939)(0.45) + (33,506)(0.95)}{36,898}$
Weighted Average (C) = 0.91

Retention Volume Required:

V = C(P/12)A

Where:
C= Runoff Coefficient (0.91)
P= Rain Intensity (2.21 in/hr)
A= Area in square feet (36,898)
V = 0.91(2.21/12) 36,898
V= 6,184 cubic feet

2.2 REQUIRED RETENTION (POST-DEVELOPMENT)

Required retention volume is calculated using a weighted average 'C' value for the site areas as follows:

- Building/Pavement/Concrete Areas = 24,877 square feet
- Landscape Areas = 12,021 square feet

The calculated weighted 'C value is as follows:

Weighted C = [(A)(C) + (A)(C)] / A (total)
Landscape Area, A (12,021 sf)
Landscape Area Coefficient, C (0.45)
Building/Pavement/Concrete Area, A (24,877 sf)
Building/Pavement/Concrete Area, C (0.95)
Weighted Average (C) = $\frac{(12{,}021)(0.45) + (24{,}877)(0.95)}{36{,}898}$
Weighted Average (C) = 0.78

Retention Volume Required:

V = C(P/12)A

Where:
C= Runoff Coefficient (0.78)
P= Rain Intensity (2.21 in/hr)
A= Area in square feet (36,898)
V = 0.78(2.21/12) 36,898
V= 5,300 cubic feet

2.3 PROVIDED RETENTION

Since the calculated retention required for the pre-development condition is 6,184 cubic feet and for the post development conditions is 5,300 cubic feet no retention is provided.

2.8 CONCLUSION

The runoff generated as a result of this development will sheet flow from roof and hardscape/landscape areas. The proposed drainage pattern for the site will be designed to flow via overland flow from west to east into 70th St.

No adverse effects to the surrounding properties are anticipated from the development of this site. The design, if properly maintained and constructed, will convey, release and protect the quality of the stormwater runoff up to, and including, the 100-year storm, 2-hours event, in a safe manner to protect life and property from damage.

3.0 LIMITATIONS

3.1 LIMITATIONS AND EXCEPTIONS OF DESIGN

The findings, conclusions, and recommendations made in this report are based on the information that was made available to EDG, in most instances from public records. The information is relevant to the date of our site work and should not be relied on to represent conditions at any later date.

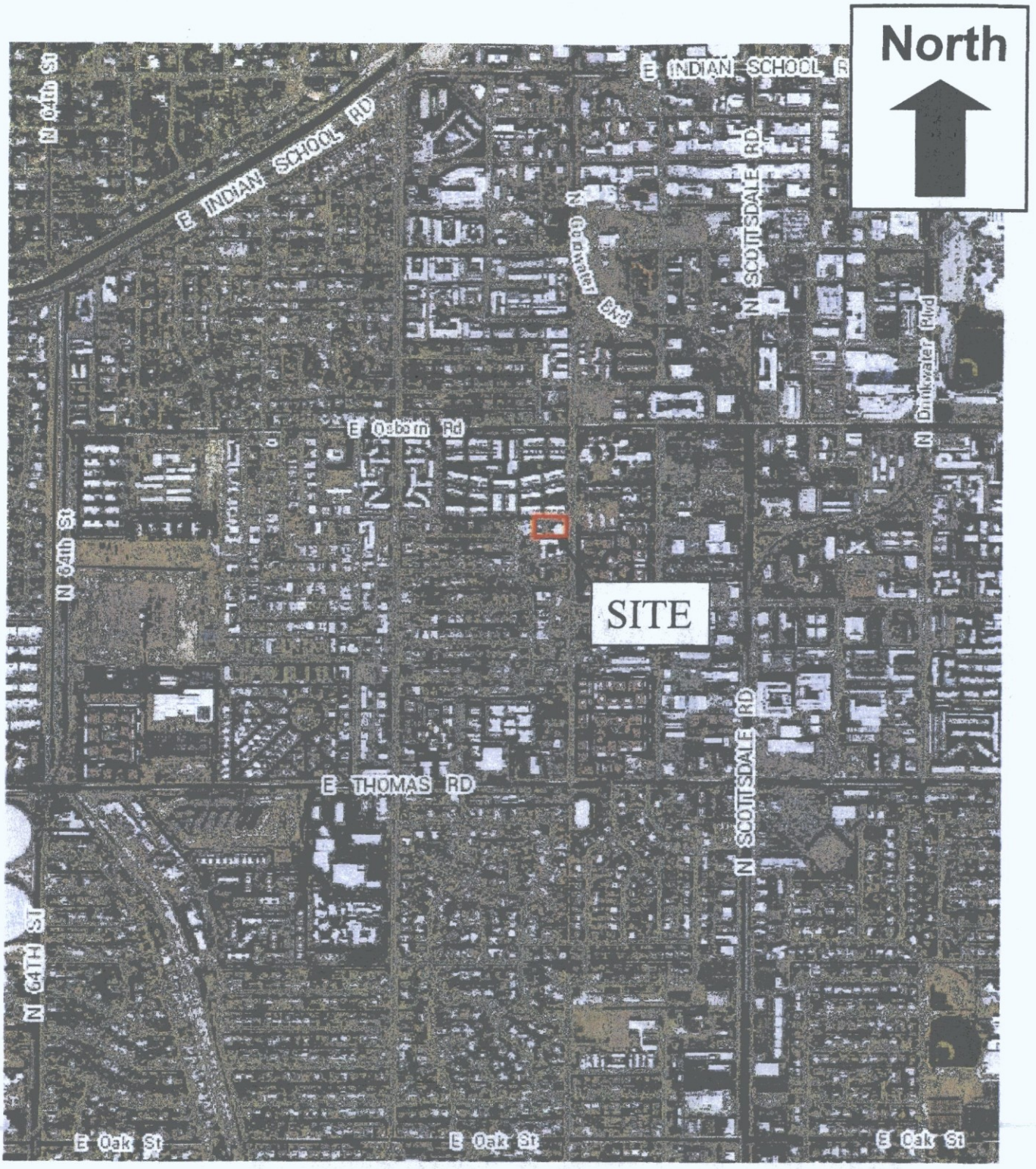
The design criteria, recommendations and conclusions expressed herein are based on information obtained during our design and on our experience and current standards of technical practice.

EDG makes no other warranties, either expressed or implied, concerning the completeness of the data furnished to us. EDG cannot be responsible for conditions or consequences arising from relevant facts that were concealed, withheld, or not fully disclosed at the time our design was undertaken.

EDG is not responsible, nor liable for work or recommendations performed or provided by others. The results provided within this report consist of opinions and conclusions of the Consulting engineer. The only warranty or guarantee made by the consultant, in connection with the services performed for this project, is that such services are performed with the care and skill ordinarily exercised by members of the profession practicing under similar conditions, at the same time, and in the same or similar locality.

No other warranty, expressed or implied, is made or intended by rendering such consulting services or by furnishing written reports of the findings. However, any deviation from the above recommendations may nullify the conclusions of this report.

APPENDIX A



AERIES CONDOMINIUMS 3214 N 70th St Scottsdale, AZ 85251 EDG Project No.: 15-EEM-2320CIV	Site Location Map	**Epsilon**
	Maricopa County Parcel Map	13765 W. Auto Drive Suite 119 Goodyear, Arizona 85338

APPENDIX B